From: Jessica Winter
To: Eric Blischke/R10/USEPA/US@EPA
Subject: Re: RI Comment
Date: 07/07/2010 01:37 PM

No, sorry about all the back and forth. I think your statement captures what I was trying to say. I just thought in addition to asking them to acknowledge those two items in the RI, it would also be helpful for them to state briefly what the implications are. Thanks.

Jessica Winter
NOAA Office of Response and Restoration
7600 Sand Point Way, Bldg 4, Room 2117A
Seattle, WA 98115
Phone (206) 526-4540
Fax (206) 526-6865
jessica.winter@noaa.gov

Blischke.Eric@epamail.epa.gov wrote:
> Your statement gets back to the time scale issue. Load, on an
> annualized basis, will not be controlled by infrequent high flow events.
> There is no question that the loading into the system on an hourly or
> daily basis will be very high during extreme high flow events but the
> load out of the system will also be high. However, movement of material
> within the system - deposition and scour will definitely be controlled
> by the extreme high flow events. I am spending way too much time on
> this. Is there something here that I am missing??
>
> Eric
>
>
>
> From: Jessica Winter <Jessica.Winter@noaa.gov>
>
> To: Eric Blischke/R10/USEPA/US@EPA
>
> Date: 07/07/2010 01:06 PM
>
> Subject: Re: RI Comment
>
>
>
>
>
>
> I think for the first part, we may want to add something along the lines
> of
>
> The approach for estimating loads is based on data collected over a
> range of flow conditions between 8,730 and 168,000 cfs. The RI Report
> should note that although loading estimates are based on average or
> central tendency flows as presented in the Section 10 figures,
> contaminated sediment transport may be controlled by infrequent high
> flow events such as the 1996 flood, therefore, the estimates given here
> represent the lower end of the range of expected loading values. The RI
> Report should further note
> that some climate models for the Pacific Northwest suggest that high
> flow events may occur more frequently in the future.
>
> in other words, give some acknowledgment of the implications of the
> statement. I only suggest this because in lots of RI/FS-type documents
> it is clear that the writers have been asked to put in a lot of caveats
> like this, but there are sometimes so many that it is hard to understand
> how they all fit in, which ones have serious implications and which ones
> don't, etc.
> ....
>
> For the second comment, I don't think we necessarily need additional
> information on how the load estimates were developed- I think these are
> explained sufficiently and it makes more sense now that I've seen the
> data from Appendix E. I'm ok with dropping this comment. The load
> estimates will be developed for the model boundary conditions, so we'll
> eventually have an additional check to see how those compare.
>
> Jessica Winter
> NOAA Office of Response and Restoration
> 7600 Sand Point Way, Bldg 4, Room 2117A
> Seattle, WA 98115
> Phone (206) 526-4540
> Fax (206) 526-6865
> jessica.winter@noaa.gov
>
>
> Blischke.Eric@epamail.epa.gov wrote:
> Jessica, I took your comment and divided it into two comments.
> The text
> of these comments are provided below. Please see if this captures
> the
> essence of your comment and edit if there is something amiss.
>
> The approach for estimating loads is based on data collected over
> a
> range of flow conditions between 8,730 and 168,000 cfs. The RI
> Report
> should note that although loading estimates are based on average

> or
> central tendency flows as presented in the Section 10 figures,
> contaminated sediment transport may be controlled by infrequent
> high
> flow events such as the 1996 flood. The RI Report should further
> note
> that some climate models for the Pacific Northwest suggest that
> high
> flow events may occur more frequently in the future.
>
> Section 6.1.1.1 of this RI indicates that more than half the PCB
> loading
> occurred at low flow. Presumably this result is due to the
> prevalence
> of low flow conditions in the Willamette River and the relatively
> infrequent nature of high flow events. Section 10.2.1.3 (p.
> 10-38) of
> the draft RI Report states that PCB concentrations at high flow
> were
> lower than at low flow. The RI Report should include additional
> information about how the assumptions that were used to develop
> low flow
> and high flow load estimates. It would not be too surprising to
> see a
> lower chemical concentration at high flow, both on a mass basis
> because
> of additional scour of larger (cleaner) sediment, and on a volume
> basis
> because of additional flow. However, if the mass of chemical at
> high
> flow is significantly lower than at low flow, some investigation
> is
> warranted. It may be that the modeled high and low flow rates
> used in
> these calculations were incorrect—underestimating high flows or
> overestimating low flows would explain the discrepancy.
>
> Thanks, Eric
>
>
>
> From: Jessica Winter <Jessica.Winter@noaa.gov>
>
>
> To: Eric Blischke/R10/USEPA/US@EPA
>
>
> Date: 07/07/2010 12:34 PM
>
>
> Subject: Re: RI Comment
>
>
>
>
>
>
>
>
>
> hi Eric,
>
> I guess my original question was based on the idea that on an
> annual
> basis, high flow and low flow represent approximately equal water
> volumes (52% vs 48%), so whichever flow regime has higher chemical
> concentrations should dominate the loading. I expected that to be
> during
>
> the high flow regime for all COCs, but now that I look at the
> figures in
>
> Appendix E, I see that that's only true for some COCs (DDx's, most
> metals, some pesticides), but PCB and PAH data are more scattered.
> The
> storm influenced event is an outlier, but the low flow
> concentrations
> are sometimes high too. I'm not sure what process would be causing
> high
> concentrations during low flow, but assuming those measurements
> are
> representative, I agree with your point #2 that we do want to
> represent
> it in the annual loading estimates.
> Also, I think we might want to try to be consistent with the
> upstream
> boundary conditions for the fate and transport modeling, which are
> derived differently for the different chemicals. Maybe the best
> way to
> approach this is to use the model boundary conditions here?
>
> Jessica Winter
> NOAA Office of Response and Restoration
> 7600 Sand Point Way, Bldg 4, Room 2117A
> Seattle, WA 98115
> Phone (206) 526-4540
> Fax (206) 526-6865
> jessica.winter@noaa.gov
>
>
>
> Blischke.Eric@epamail.epa.gov wrote:
>

> Sure. You can also make another run at my questions. I do think I
>
> was
>
> misinterpreting the time scale issue that you were perhaps getting at
> with your point about large scale events controlling contaminant
> transport versus loading. Certainly the load from the infrequent
> extreme high flow event is nothing compared to the load associated
>
> with
>
> frequent low flow events but these extreme high flow events may result
> in the areas of extreme scour and/or deposition which can have an
> significant effect on overall contaminant movement.
>
> Eric
>
>
>
>
>
>
> From: Jessica Winter <Jessica.Winter@noaa.gov>
>
>
>
>
>
> To: Eric Blischke/R10/USEPA/US@EPA
>
>
>
>
>
> Date: 07/06/2010 02:57 PM
>
>
>
>
>
> Subject: Re: RI Comment
>
>
>
>
>
>
>
>
>
>
>
> thanks- other meetings came up this afternoon so can I take a look at
> this tonight and give you a call tomorrow?
> hope you had a good 4th.
>
> Jessica Winter
> NOAA Office of Response and Restoration
> 7600 Sand Point Way, Bldg 4, Room 2117A
> Seattle, WA 98115
> Phone (206) 526-4540
> Fax (206) 526-6865
> jessica.winter@noaa.gov
>
>
>
> Blischke.Eric@epamail.epa.gov wrote:
>
>
> Jessica, here are some questions/thoughts regarding your comment.
>
>
> Call
>
>
> me after 2:00 pm to discuss (503-326-4006).
>
> 1. I think that the point the LWG makes here is that the majority
>
> of
>
> the load is during low flow conditions because high flow conditions
> occur infrequently. On a kg/day basis, the upstream load is much
>
>
> higher
>
>
> than during low flow conditions, but on an annual basis, more load
> occurs during low flow conditions. My statement about

> a 5X increase
> refers to daily load.
>
> 2. According to the figure referenced in this
> section of the RI
>
>
> Report
>
>
> (Figure 6.1-2), the average case results in the
> highest load.
>
>
> Shouldn't
>
>
> this be what we look at? The information presented in
> Figure 10.2-2
> presents average (central) annual loading estimates.
> We will need to
> rely on the model to look at the extreme case (e.g.,
> 400,000 cfs).
>
> 3. I agree that if the flow estimates are off, the
> loading rates
>
> will
>
> be off. Getting back to 1, I think it is a time scale
> question.
>
> Your
>
> comment about high flow events controlling is true.
> But that may be
> more for how things are moved around in the system
> (e.g., deposition,
> erosion, sediment transport) rather than annual load.
>
> 4. Another question of time scale (I think).
>
> Let's talk about this further.
>
> Thanks, Eric
>
>
>
>
>
>
>
>
> From: Jessica Winter <Jessica.Winter@noaa.gov>
>
>
>
>
>
>
> To: Eric Blischke/R10/USEPA/US@EPA
>
>
>
>
>
>
> Date: 07/02/2010 12:51 PM
>
>
>
>
>
>
> Subject: Re: RI Comment
>
>
>
>
>
>
>
>
> I think the request to LWG here is:
>
> 1. Please explain why "the majority of the PCB mass
> load enter[s] the
> Study Area during low-flow conditions as compared to
> high-flow
>
>
> periods"
>
>
> (10.2.1.3 page 10-38) when this conflicts with your
> (Eric's)
> understanding that there is a 5x increase in upstream
> loading during
> high flow conditions.
>
> 2. Assuming that there /is/ an increase in upstream
> loading during

>
>
> high
>
>
> flow conditions, to be conservative we should use high
> flow
>
> conditions
>
> to estimate loads in the RI.
> I would agree with you, Eric, that a /relatively/ high
> flow event is
> adequate and we don't need to use the extreme high
> flow events for
>
>
> this,
>
>
> but a "typical water year" as discussed on page 10-14
> would probably
>
>
> not
>
>
> be sufficiently conservative -- maybe something closer
> to a 2-year or
> 5-year flood? You point out that once the fate and
> transport model is
> done, we can use results from that, so perhaps the
> best approach will
>
>
> be
>
>
> to look at a few decades of model output and pick a
> representative
>
>
> value
>
>
> or range of values from that. I'm not sure what to
> expect re: the
>
>
> timing
>
>
> of the next iterations of the modeling and the RI, but
> that sounds
>
>
> good
>
>
> if the timing will work.
>
> 3. The loading estimates are based on empirical
> measurements of
> concentrations and modeled predictions of flow rates
> (from the HST-
>
>
> see
>
>
> last paragraph of page 6-6). If the modeled flow rates
> are off, that
> would explain #1 above. Lacking a broad validation of
> the HST model,
>
> i
>
> don't know whether that's the issue.
>
> 4.Using the Nov 2006 stormwater-influenced event with
> flows exceeding
> 100,000 cfs to represent low flow conditions is
> another potential
> explanation for #1 above.
>
> Hope this helps. Sorry to pack so much into one
> comment- I know it
>
> was
>
> very dense. I am available before 11 and after 2 on
> Tuesday.
>
> Jessica Winter
> NOAA Office of Response and Restoration
> 7600 Sand Point Way, Bldg 4, Room 2117A
> Seattle, WA 98115
> Phone (206) 526-4540
> Fax (206) 526-6865
> jessica.winter@noaa.gov
>

> Blischke.Eric@epamail.epa.gov wrote:
>
> Tomorrow would be fine. I will actually be out tomorrow and Monday
>
> but
>
> will be working to finalize the RI comments early next week (Tuesday/Wednesday). It is really the eco comments that are the
>
> hold
>
> up.
>
> Eric
>
> From: Jessica Winter <Jessica.Winter@noaa.gov>
>
> To: Eric Blischke/R10/USEPA/US@EPA
>
> Date: 07/01/2010 12:37 PM
>
> Subject: Re: RI Comment
>
> Hi Eric-
> I will get back to you on this soon- is COB tomorrow OK? What is
>
> your
>
> timeframe for getting this out? I'm just in the middle of a couple
>
> other
>
> things right now, but this shouldn't take me too long.
>
> Jessica Winter
> NOAA Office of Response and Restoration
> 7600 Sand Point Way, Bldg 4, Room 2117A
> Seattle, WA 98115
> Phone (206) 526-4540
> Fax (206) 526-6865
> jessica.winter@noaa.gov
>
> Blischke.Eric@epamail.epa.gov wrote:
>
> Jessica, we are in the process of finalizing our comprehensive set
>
> of
>
> RI

comments. One of your comments is quite complex and I do not fully understand it. The comment is repeated below:

The approach for estimating loads is limited in that it considers only typical water years. Consider looking at high flow conditions instead. At many sites, the majority of sediment transport occurs under high flow conditions, even though these conditions don't occur very often, and thus contaminant transport also occurs primarily under high flow conditions.* Also, will the meaning of "typical" change with climate change? We might expect more frequent floods in the future. For both these reasons, looking at flood conditions rather than typical conditions will probably give a better sense of contaminant transport.

*Section 6.1.1.1 of this RI indicates that more than half the PCB loading occurred at low flow. This is different from many other sites and hard to justify conceptually since the volume of water is described as roughly evenly split between high and low flow (52% to 48%), and the

> mass of PCBs on suspended solids wouldn’t be expected to decrease
>
> at
>
> high flow, even if the concentration is a bit diluted. Section
>
> 10.2.1.3
>
> (p. 10-38) says that PCB concentrations at high flow were lower
>
> than
>
> at
>
> low flow, but what were the masses? You wouldn’t be too surprised
>
> to
>
> see
>
> a lower chemical concentration at high flow, both on a mass basis because of additional scour of larger (cleaner) sediment, and on a volume basis because of additional flow, but if the mass of
>
> chemical
>
> at
>
> high flow is significantly lower than at low flow, some
>
> investigation
>
> is
>
> warranted. It may be that the modeled high and low flow rates used
>
> in
>
> these calculations were incorrect—underestimating high flows or overestimating low flows would explain the discrepancy. It’s hard
>
> to
>
> say
>
> whether this is the case based on the data in the HST model reports—calibration velocities are shown there only for a single sampling event in May 2003 and validation is shown for two events

in

2004 (Appendices H and J to the 2006 modeling report), but I wasn't

able

to tell whether the observations took place during high or low flow conditions. Another explanation for the unexpected result may be

E2.2.1

p. E-4: "the November 2006 stormwater-influenced low-flow sampling

event

was considered a low-flow event for this loading analysis." This

event

may not be representative of low flow because there was extremely

high

precipitation and flow exceeded 100,000 cfs by the end of the event

even

though at the beginning of the event it was low flow (23,000 cfs)

(see

figure 5.3-4). I would recommend looking at the measured

concentrations

from the November 2006 sampling event to see how they compare to

other

"low flow" sampling results.(I tried looking at the data myself a

little

bit but it's a pain to look at -- some water data in pg/L, some in

ug/L,

and so on-- so probably the best would be to ask Integral or

whichever

subcontractor wrote that section to evaluate the concentrations

they

used in their "subaveraging" calculations (see p. 6-7 of the RI)

and

determine whether they are consistent with other low flow concentrations.

It seems that the loading estimates are based on empirical data.

We

collected surface water during a relatively high flow even (170,000

cfs)

to gain an understanding of what was coming into the system when

the

river was high and turbid. I sense is that this represents a

reasonable

attempt to understand loading during high flow conditions even

though

we

do not have data for the extreme high flow events (e.g., 400,000

cfs).

However, the 400,000 cfs events occur relatively infrequently

(1948,

1964, 1996) while the 100,000 -200,000 cfs event takes place just

about

every year. So the question is two fold: 1) Do we need to look at

the

extreme high flow events if we are looking at the typical high flow event and 2) If we need to look at higher flow events, how do we do

this

from a loading perspective recognizing that we are considering the extreme flow event through our fate and transport modeling efforts.

As for the flow/volume relationships, my take on the data is that upstream concentration are lower than high flow by a factor of two

but

that the high flow event is 10 times that of the low flow condition resulting in a 5X increase in upstream loading during high flow conditions. The more interesting thing from my perspective is how

the

high flow events swamp the localized sources that are so very

prominent

during low flow conditions.

I agree that the November 2006 event is not a "low flow" event per

se.

It is really a "stormwater influenced" event as described in the

Section

5 figures (e.g., figure 5.3-15/16).

Anyway, can you take another look at your comment and edit it

taking

> into account some of my observations above
> and being clear as to
>
>
> what
>
>
> change we want to see in the revised RI
> Report.
>
> Thanks, Eric
>
>
>
>
>
> Loading information is based on empirical
> data. Water sampling at
> 170,000 cfs is used to estimate high flow
> loads. Elements of the
> rationale can be discussed as part of fate
> and transport modeling
> approach.
>
>
>
>